ALLEN-BRADLEY
BULLETIN 1203-SM1
BASIC MODE

APPLICATION NOTE # SM1 - 1

June 24, 1997

PURPOSE

The purpose of this document is to provide guidelines for wiring and control schemes for SCANport devices including Bulletin 1305 and 1336 PLUS AC Drives. This document is a suggestion only. Users must ensure that installations meet applicable codes and are suitable for the existing conditions.

WHAT THIS NOTE CONTAINS

This document contains information and an example ladder program that demonstrate how to control three 1305 drives using an SLC-500 and a 1203-SM1 module. This note uses the 1203-SM1 configured for basic module operation. The 1203-SM1 can be used with any SLC-500 processor in this configuration.

INTENDED AUDIENCE

This application note should be used by personnel familiar with the hardware components and programming procedures necessary to operate SCANport devices. It is also assumed that the user has some familiarity with the SLC-500 and ladder programming.

WHERE IT IS USED

The diagrams, parameter settings and auxiliary hardware used in this application note are designed to address specific issues in many different applications. Some changes by the user may be necessary to apply the concepts of this document to a specific application.

APPLICATION CONSIDERATIONS

These example ladder programs were written to be simple and clear examples. Consult the SLC-500 and 1203-SM1 manuals for more information.

SCANport devices may assign different meanings to bits in the Logic Command and Status words. The usage of the Reference and Feedback words may also vary. Consult the manual for your SCANport device for more information.

SLC CONFIGURATION

The screen prints in Figures 1 and 2 show the configuration of the SLC system for the example program. Refer to the SLC-500 manuals for more information on how to configure an SLC rack and modules.

As is shown in Figure 1, the SLC rack is configured with a 1203-SM1 module installed in the first slot. A 1747-IA16 module is installed in slot 2 and a 1747-OV8 module is installed in slot 3. The module ID code for the 1203-SM1 is 3516 when used as a basic mode module.

```
+------------ SLC-500 ADVANCED PROGRAMMING SOFTWARE ---- RELEASE 6.01  --------+
|                                                                               |
| +- I/O CONFIGURATION FOR:SM1_AP     ----------------------------------------+ |
| |  RACK 1 =       1746-A4   4-slot Backplane                                | |
| |  RACK 2 =       NOT INSTALLED                                             | |
| |  RACK 3 =       NOT INSTALLED                                             | |
| |                                                                           | |
| |     SLOT       CATALOG #     CARD DESCRIPTION                           | |
| |   *  0         1747-L532   5/03 CPU -12K USER MEMORY                     | |
| |   *  1         OTHER       I/O Module - ID code = 3516                   | |
| |   *  2         1747-IA16   16-INPUT 100/120 VAC                          | |
| |   *  3         1747-OV8     8-OUTPUT [TRANS](SINK)10-50 VDC              | |
| |      4                                                                    | |
| |      5                                                                    | |
| |      6                                                                    | |
| |      7                                                                    | |
| |      8                                                                    | |
+-+- ESC exits ---------------------------------------------------------------+

READ   ONLINE          MODIFY  MODIFY  DELETE   UNDEL   EXIT    SPIO
CONFIG  CONFIG           RACKS   SLOT    SLOT    SLOT           CONFIG
  F1      F2              F4      F5      F6      F7      F8      F9
```

Figure 1 -- SLC Configuration

Figure 2 shows the information that should be displayed by APS software if the module ID code for the 1203-SM1 is set to the correct value of 3516 for use as a basic mode module. This information should not require modification.

```
+------------ SLC-500 ADVANCED PROGRAMMING SOFTWARE ---- RELEASE 6.01  --------+
|                                                                               |
| +- I/O CONFIGURATION FOR:SM1_AP     ----------------------------------------+ |
| |  RACK 1 =       1746-A4   4-slot Backplane                                | |
| |  RACK 2 =       +- SPECIAL CONFIG FOR SLOT:       1  ---+                 | |
| |  RACK 3 =       |                                        |                | |
| |                 |  Module's ID Code:           3516      |                | |
| |     SLOT       C|  Maximum Input Words:           8      |                | |
| |   *  0         1|  Maximum Output Words:          8      |                | |
| |   *  1         O|  Scanned Input Words:           8      |                | |
| |   *  2         1|  Scanned Output Words:          8      |                | |
| |   *  3         1|  M0 Length:                     0      |                | |
| |      4          |  M1 Length:                     0      |                | |
| |      5          |  'G' File Size:                 0      |                | |
| |      6          |  ISR Number:                    0      |                | |
| |      7          |                                        |                | |
| |      8          +- ESC exits ----------------------------+                | |
+-+- ESC exits ---------------------------------------------------------------+

ISR           MODIFY          ADVNCD          G FILE
NUMBER          G FILE          SETUP           SIZE
  F1              F3              F5              F7
```

Figure 2 -- 1203-SM1 Configuration

Ladder Program –
SCANport Channel Enables

The section of program shown in Figure 3 enables all three SCANport channels on the 1203-SM1 module.

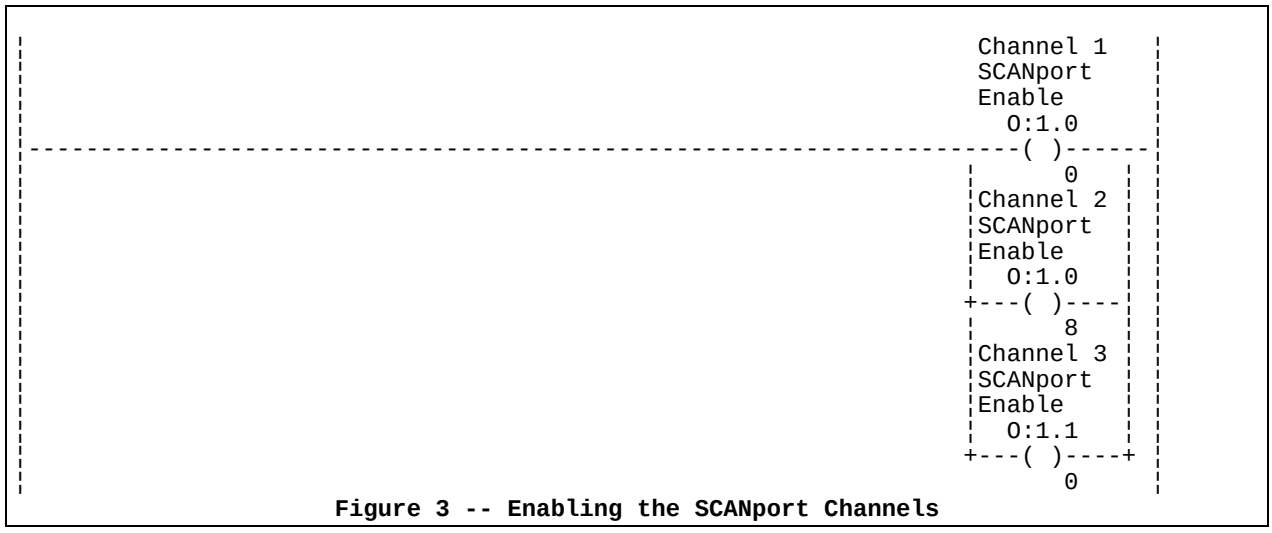


Figure 3 -- Enabling the SCANport Channels

Ladder Program –
Drive 1 Start/Stop and Reference

The section of program shown in Figure 4 provides start/stop control and a frequency reference to the 1305 drive connected to SCANport channel 1.

The User Start is a normally open pushbutton while the User Stop is a normally closed pushbutton.

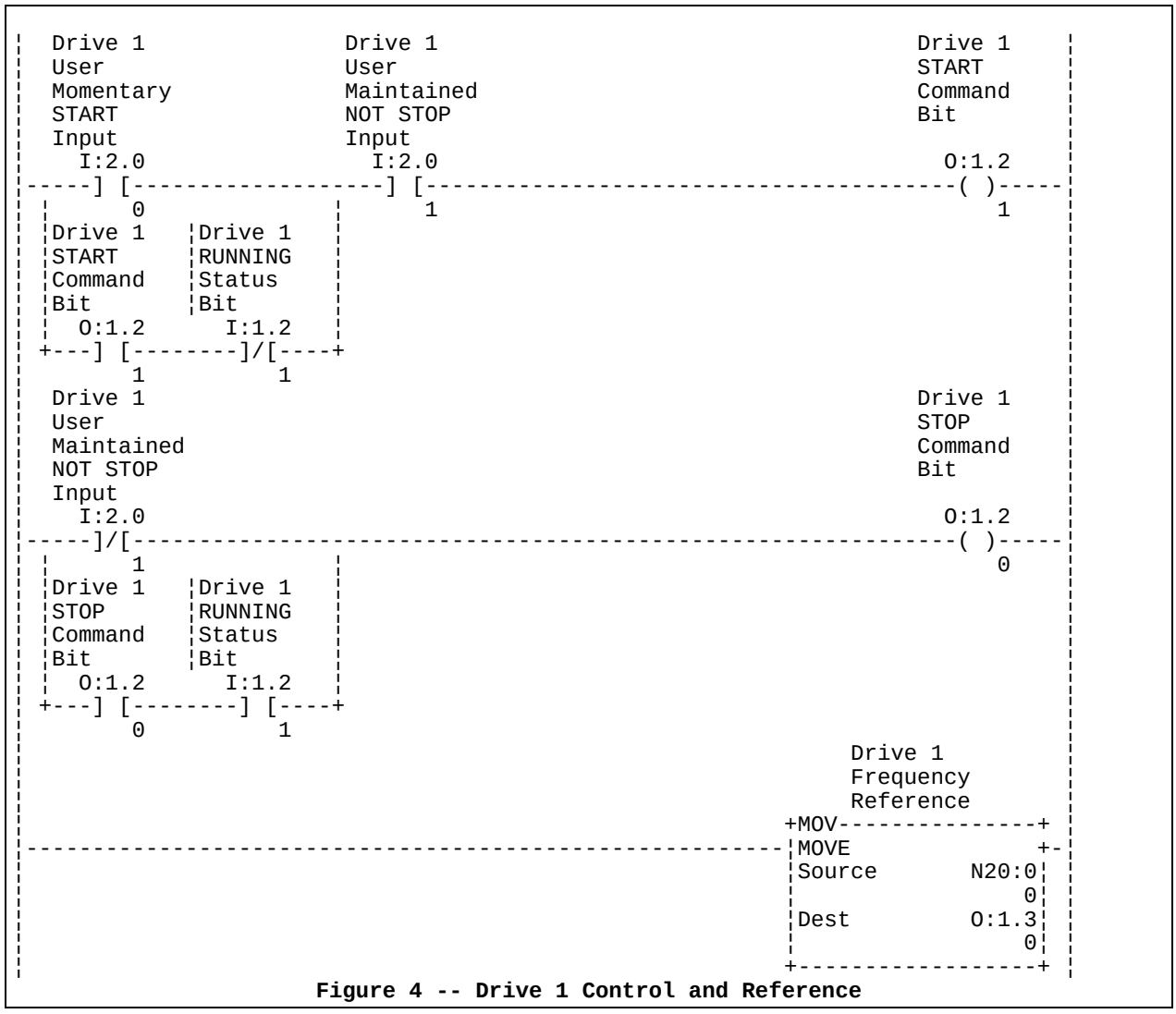


Figure 4 -- Drive 1 Control and Reference

Ladder Program –
Drive 2 Start/Stop and Reference

The section of program shown in Figure 5 provides start/stop control and a frequency reference to the 1305 drive connected to SCANport channel 2. This section functions identically to that shown in Figure 4 except for the changes in addresses.

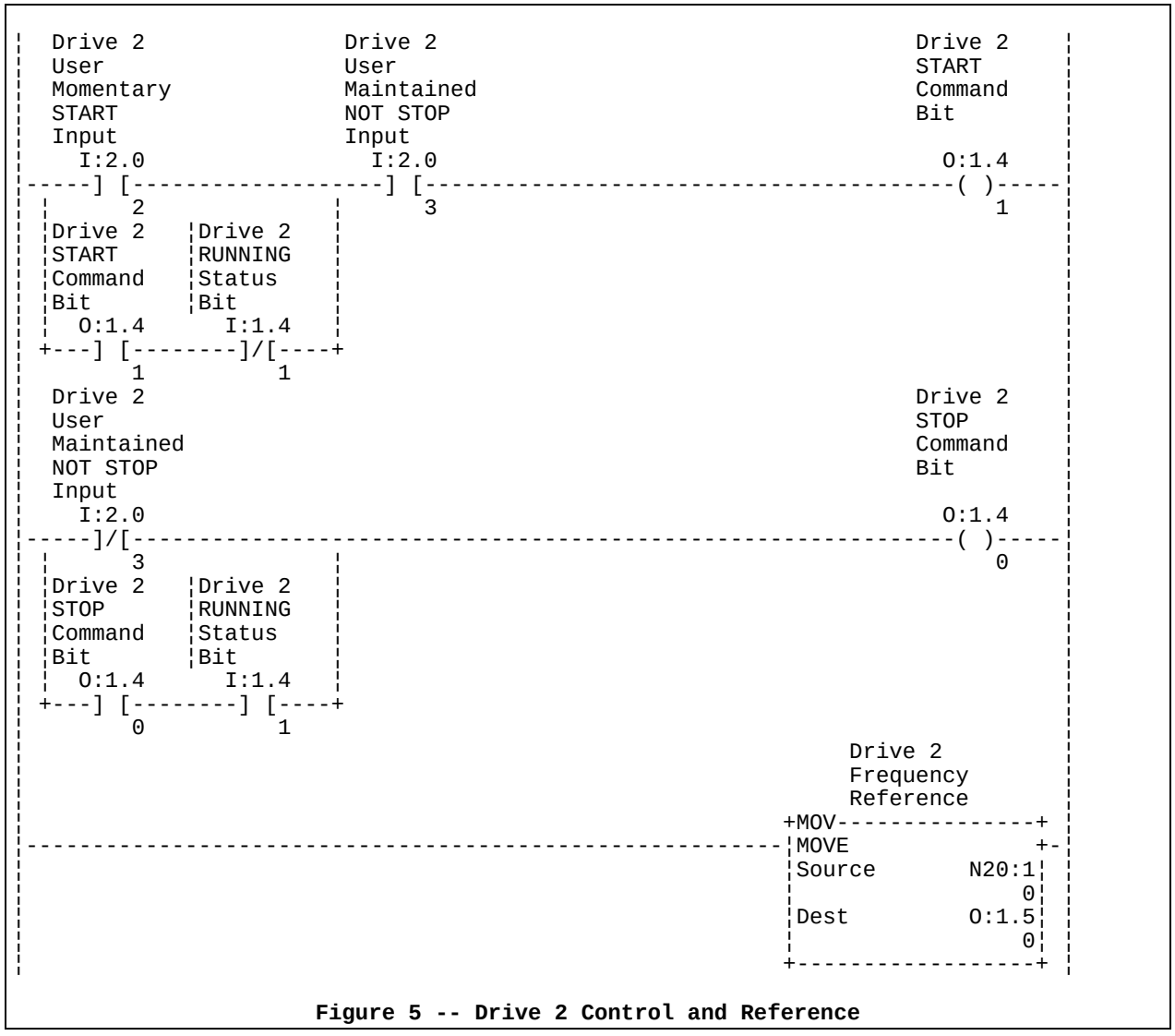


Figure 5 -- Drive 2 Control and Reference

Ladder Program –
Drive 3 Start/Stop and Reference

The section of program shown in Figure 6 provides start/stop control and a frequency reference to the 1305 drive connected to SCANport channel 3. This section functions identically to that shown in Figure 4 except for the changes in addresses.

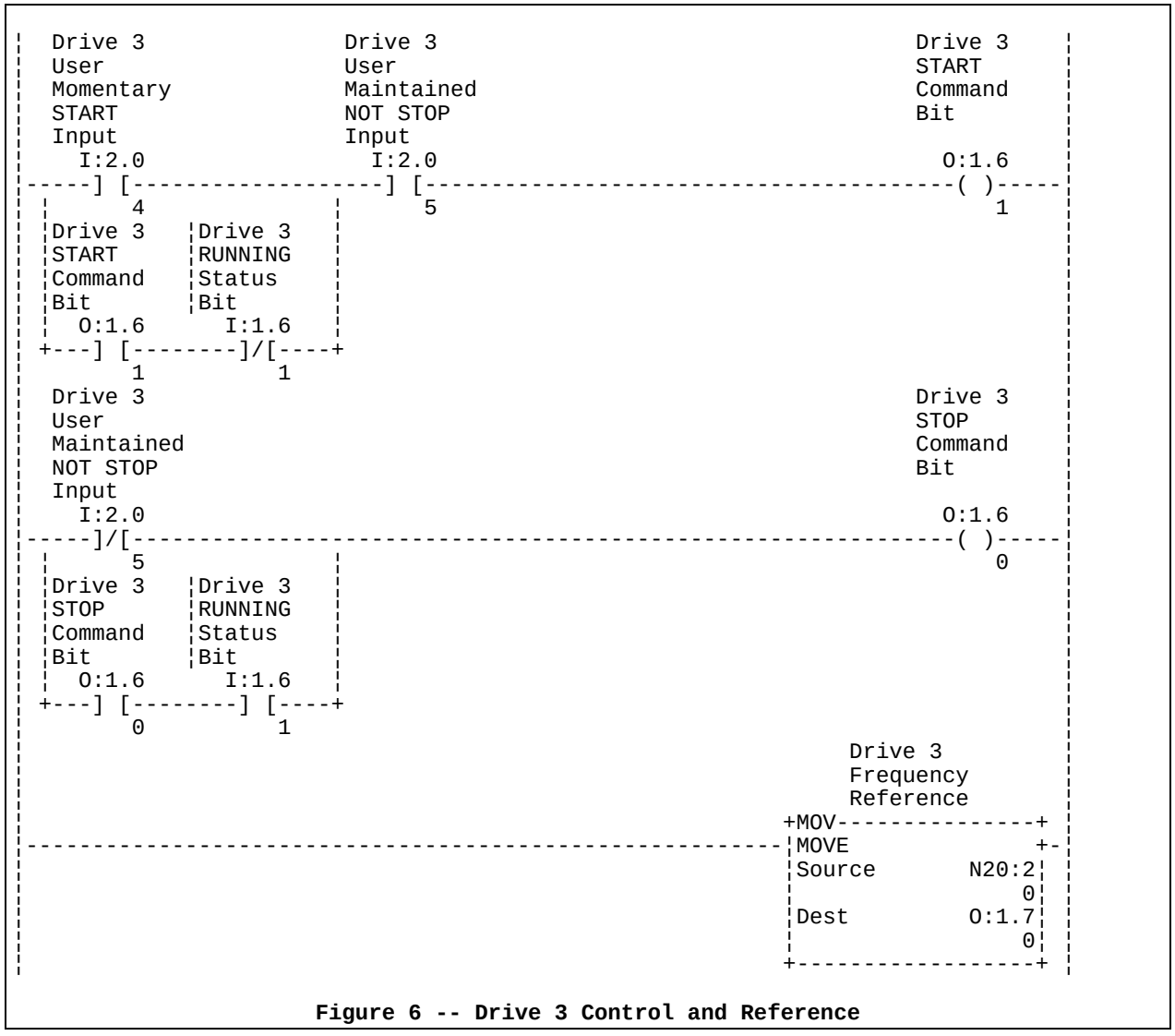


Figure 6 -- Drive 3 Control and Reference

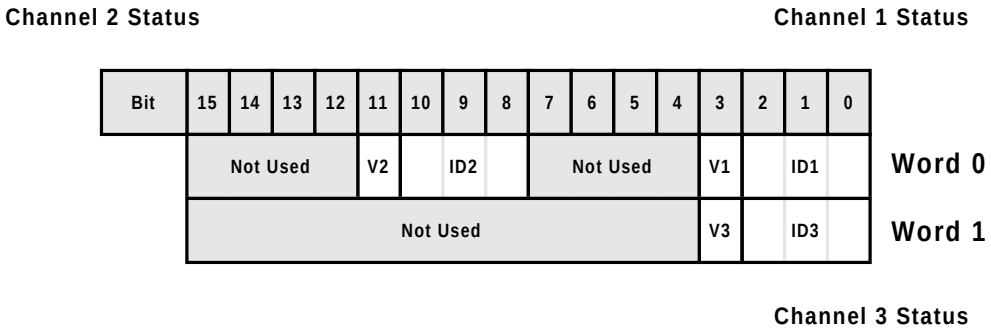
INPUT DATA TABLE FILE

The data table file shown in Figure 7 is the input data read from the 1203-SM1 via the SLC backplane.

```
address       15      data       0
I:1              0000 0000 0000 0000    Drives 1 & 2 SCANport Channel Status
I:1.1            0000 0000 0000 0000    Drive 3 SCANport Channel Status
I:1.2            0000 0000 0000 0000    Drive 1 Logic Status
I:1.3            0000 0000 0000 0000    Drive 1 Feedback
I:1.4            0000 0000 0000 0000    Drive 2 Logic Status
I:1.5            0000 0000 0000 0000    Drive 2 Feedback
I:1.6            0000 0000 0000 0000    Drive 3 Logic Status
I:1.7            0000 0000 0000 0000    Drive 3 Feedback
```

Figure 7 -- Input Data Table File

Channel Status Input Image Definitions



NOTE: x = Designated SCANport Channel Number on the module.

IDx SCANport Channel x Connected Adapter Port ID Number. This three (3) bit field contains the adapter port number that Channel x is connected to on the SCANport device. It should contain a value between 1 and 7. If this field contains a 7, the channel is not connected to the SCANport device or the SCANport device is not powered.

Vx SCANport Channel x Valid Data bit. When high (1) the Logic Status and Analog Feedback values are valid and can be used. When low (0) the values should not be used as they are not being updated.

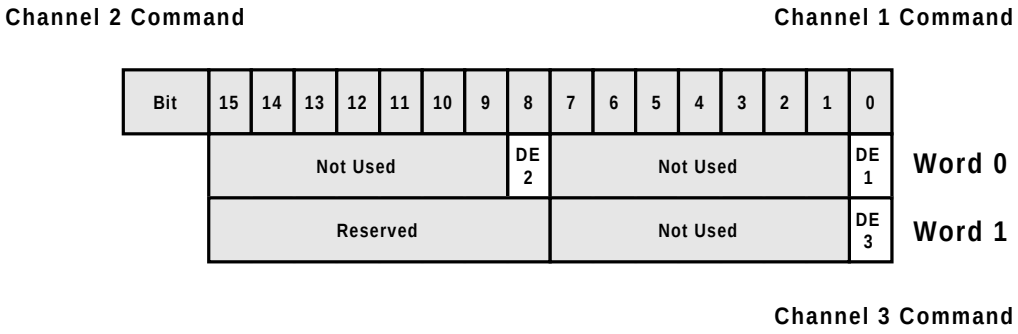
OUTPUT DATA TABLE FILE

The data table file shown in Figure 8 is the data to be sent to the 1203-SM1 via the SLC backplane.

```
address       15      data       0
O:1              0000 0000 0000 0000    Drives 1 & 2 SCANport Channel Enables
O:1.1            0000 0000 0000 0000    Drive 3 SCANport Channel Enable
O:1.2            0000 0000 0000 0000    Drive 1 Logic Command
O:1.3            0000 0000 0000 0000    Drive 1 Reference
O:1.4            0000 0000 0000 0000    Drive 2 Logic Command
O:1.5            0000 0000 0000 0000    Drive 2 Reference
O:1.6            0000 0000 0000 0000    Drive 3 Logic Command
O:1.7            0000 0000 0000 0000    Drive 3 Reference
```

Figure 8 -- Output Data Table File

Channel Command Output Image Definitions



NOTE: x = Designated SCANport Channel Number on the module.

DEx SCANport Channel x Data Enable bit. While low (0), the module will not connect to or transfer I/O data to or from the SCANport device wired to Channel x. When high (1), the module will connect to the SCANport device and will transfer the appropriate I/O data. When reset to low (0), the module will disconnect from the SCANport device. (NOTE: This will usually cause the connected SCANport product to fault -- refer to the manual for your SCANport device for more information.)